REMARKS

Claims 5,6, 8-11 and 13-19 are pending. Claims 1-4, 7, and 12 have been canceled.

The rejection of claims 1-3, 5-8, 10-14, 16 and 17 under 35 U.S.C. 102(b) as being anticipated by Daly (US6,431,144) are respectfully traversed.

Claim 5 recites a method of detecting the presence of an obstruction inside a motorized throttle. The method includes recording a default position of the throttle plate. A predetermined voltage is then applied to the throttle motor in the closing direction for a predetermined period of time. The provisional closed position of the throttle plate is thereafter recorded. A first displacement is determined between the recorded default position and the recorded provisional closed position. An obstruction is identified if the first displacement is less than a predetermined displacement.

Daly describes using a potentiometer to provide temperature-related data (changes in the resistance elements of the potentiometer) to determine the formation of ice. Based on whether ice is detected by the temperature data, Daly describes utilizing the potentiometer to provide feedback information to the controller regarding the position of the shaft for determining whether the blade of the throttle is in an open or closed position. If the throttle is in the open position, a first frequency is applied to induce oscillations within the throttle assembly for breaking the ice. If the throttle is in the closed position, a second frequency will be induced for inducing oscillations for breaking up the ice. The different frequencies are used depending on the position of the blade to optimize the oscillations. Daly does not suggest detecting the formation of an obstruction by determining the first displacement of the throttle plate (between the provisional closed position and the default position) and then determining if the first displacement is less than the predetermined displacement. Therefore, claim 5 is allowable.

Claims 6 depends from claim 5 and are therefore allowable.

Claim 8 recites alerting a powertrain control module that no obstruction exists if the first displacement is at least the predetermined displacement. Daly fails to describe or suggest determining a first predetermined displacement for comparing with a predetermined displacement for detecting the obstruction and alerting the powertrain control module in response thereto. Therefore claim 8 is allowable.

Claim 10 recites a method of removing an obstruction inside a motorized throttle by first detecting the obstruction by determining a first displacement between a recorded default throttle plate position and a recorded provisional closed throttle plate position. The obstruction is then removed by applying a predetermined deflection voltage to a throttle motor to drive the throttle plate in a first direction (i.e., opening direction) and then applying the predetermined deflection voltage to drive the throttle motor in a second direction (i.e., closing direction) for banging the throttle plate in an attempt to break up the ice.

Daly describes inducing the throttle assembly components with a first selected frequency to induce oscillations within the throttle assembly components at the resonant frequency when the blade is in an open position. When the blade is in a closed position, the throttle assembly components are induced with a second frequency. The different frequencies are described as being used at the different positions to maximize the oscillation. Daly relies on the maximizing vibrations using the resonant frequency in addition to using a vibration enhancer (shown at 50) to break the ice as opposed to banging the throttle plate. Daly does not describe applying a maximum voltage to the throttle motor to bang the throttle plate for removing the obstruction. Therefore, the rejection of claim 10 should be reversed.

Claim 11 recites applying the maximum voltage to the motor in a first and second direction within respective time periods. Applying the predetermined voltage to the motor within the respective time periods prevents damage to the motor. Daly fails to describe or suggest applying the voltages within the respective time periods. Therefore, claim 11 is allowable.

Claim 13 recites using a maximum voltage of 12 volts which is the nominal maximum voltage available in the vehicle. Daly fails to suggest utilizing 12 volts. Therefore claim 13 is allowable.

Claim 14 recites a method of accurately recording an actual closed position of a throttle plate by applying a predetermined deflection voltage to the throttle plate in a closing direction for a predetermined time and recording the provisional closed position as a zero degree reference from which to control the throttle plate to a desired angle. The provisional closed position is adopted to be the actual closed position if a first displacement between a default position and the provisional closed position is greater than a predetermined displacement.

Daly fails to suggest determining a provisional closed position of throttle plate and using the recorded provisional closed position of the throttle plate as a zero degree reference for controlling the throttle plate to a desired angle. Therefore the rejection of claim 14 should be reversed.

Claim 16 recites that the predetermined deflection voltage is the 12 volts recites which is the nominal maximum voltage available in the vehicle. Daly fails to suggest utilizing 12 volts. Daly's primary focus is on applying a resonant frequency to brake up the ice. Daly fails to suggest utilizing 12 volts. Therefore claim 16 is allowable.

Claim 17 recites a system for removing an obstruction inside a motorized throttle. The system includes a throttle plate and a throttle motor. A predetermined deflection voltage is applied to the throttle motor which results in an impact torque for banging the throttle plate in a first direction and a second direction. The predetermined deflection voltage is applied to the throttle plate for a limited predetermined time in each direction to prevent damage to the motor.

The office action states that the claimed maximum steady torque is just an upper limit of the torques applied by Daly. Daly references applying a torque at different frequencies depending upon the position of the throttle blade. Daly utilizes the natural frequency and a vibration enhancer to break up

the ice. Daly does not reference nor suggest applying a maximum voltage to generate a maximum impact torque. Daly fails to teach or suggest the limitations of claim 17. Therefore, the rejection of claim 17 should be reversed.

The rejection of claims 4, 15, and 19 rejected under 35 U.S.C. 103(a) as being unpatentable over Daly (US 6,431,144) is respectfully traversed.

Claim 15 recites the predetermined period of time is 40 milliseconds. The predetermined voltage is applied for the specified time after the obstruction is cleared to ensure the plate is fully closed. This provides sufficient time to achieve the closed throttle position without any damage to the motor. Daly induces a frequency for a short period of time only to break up the ice. The limitations of claim 15 are neither shown nor suggested by Daly. Therefore, claims 15 is allowable.

Claim 19 recites the predetermined period of time is 80 milliseconds. The full motor voltage is applied for the duration in the closing direction to breakup the ice. The shortened duration prevents damage to the motor. Daly induces a frequency for a short period of time. A specific time is neither described or suggested by Daly. The limitations of claim 19 is neither shown nor suggested by Daly. Therefore, claim 19 is allowable.

The rejection of claim 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Daly (US 6,431,144) is respectfully traversed.

Claim 9 recites that the predetermined displacement is 7 degrees. The office action recites that this specified degree of tolerance of 7 degrees is the throttle angle and that this degree recited does not provide an advantage. In referencing par 26 of the detailed description, the nominal angle is 8 degrees and the predetermined displacement of 7 degrees is chosen to account for angle variation due to manufacturing and wear. Since the Daly fails to disclose the predetermined displacement of 7 degrees and that fact that 7 degrees was chosen for an advantageous reason, claim 9 is allowable.

The rejection of claim 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Daly (US 6,431,144) is respectfully traversed.

Claim 18 recites a predetermined torque is a maximum steady-state torque. Daly fails to teach or suggest applying a maximum steady-state torque. Daly induces a frequency that is equal to the resonant frequency for maximizing the vibration to break up the ice. Since Daly fails to teach or suggest applying the maximum steady-state torque, claim 18 is allowable.

In view of the foregoing amendment and remarks, all pending claims are in condition for allowance. Favorable action is respectfully solicited.

Respectfully submitted,

Frank L. Lollo
Reg. No. 48,854

MacMillan, Sobanski & Todd, LLC
One Maritime Plaza, Fourth Floor
720 Water Street
Toledo, Ohio 43604
Tel: 734-542-0900
Fax: 734-542-9569